



🔧 Title ELECTRONIC EXTREMAL REGULATOR

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🔧 Short presentation

The invention relates to an extreme electronic regulator intended for the control of a conventional electronic power converter by which the operation at the maximum power point of an afferent photovoltaic panel is ensured. The regulator contains a generator that produces a triangular disturbance signal that is applied to the control of the electronic power converter, simultaneously with two short pulses, synchronized with the triangular signal. The effects of the disturbance are detected by a power transducer whose output signal is stored in two sample-and-hold circuits (S&H) in alternating successive moments, controlled by the generator pulses. The signal resulting from the decrease of the signals stored in the sample-and-hold circuits is applied to a usual integrating regulator to produce the intermediate control signal which will be added to the triangular signal, thus obtaining the control signal for the electronic converter which will ensure the operation of the photovoltaic panel at the point of maximum power (PPM).

🔧 Applicability

The application of the invention shows the following advantages:

- simplifying the construction and reducing the price of the extreme regulator that ensures the operation of photovoltaic panels in the Point of Maximum Power (PPM), by avoiding the signal multiplier and by using the usual low-cost electronic circuits;
- increasing the efficiency of medium and low power photovoltaic panels (of the order of tens of watts) by up to 30% (depending on the operating conditions), thus justifying the attachment of the extreme regulator to the electronic power converter;
- increasing the efficiency of photovoltaic panels of any power, due to the robust stability of the algorithm implemented in the extreme regulator, according to the invention.

🔧 Images

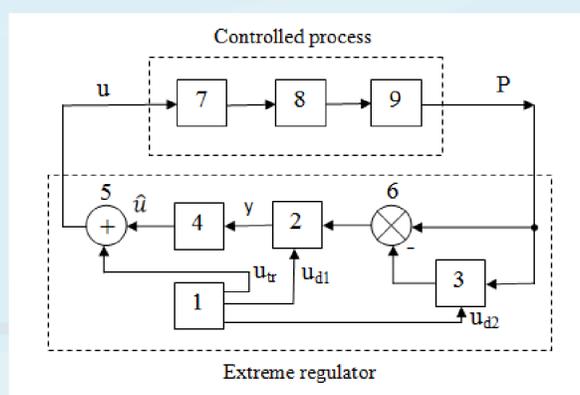


Figure 1. The structure of the extreme regulator and the controlled process

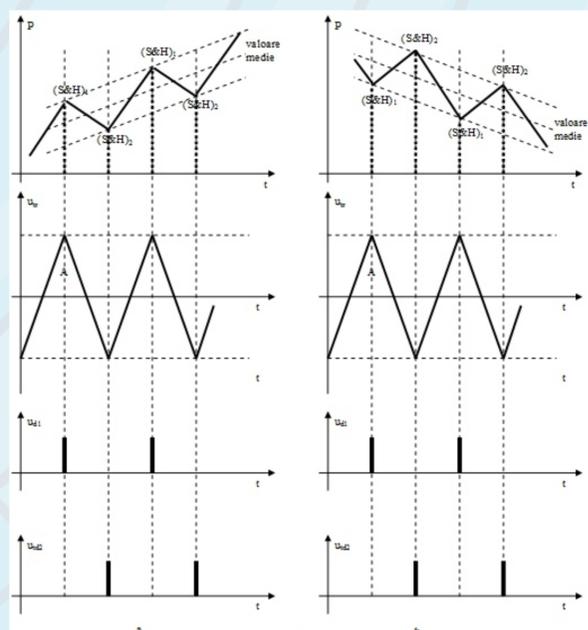


Figure 2. Operation of the extreme controller, according to the invention:
a) operation to the left of the maximum power point (PPM);
b) operation to the right of the maximum power point (PPM)